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No. 14 OCTOBER, 1954

AUSTRALIA

Tuna Survey in Queensland Waters : — The Australian Government is assisting a 2 months' investigation on tuna catching off the coast of Queensland by a fishing company which owns two tuna boats equipped for pole fishing and trolling. Observers from the Fisheries Division, Department of Commerce and Agriculture, and the Fisheries Division, C.S.I.R.O. will be on board to report on the operations.

Prawn grounds off New South Wales :- Appreciable quantities of school prawns are reported to have been discovered in the sea in a northerly direction off the entrance to the Sussex inlet. Further investigations are being directed to the above area. Eight species of prawns recorded from Queensland and South Australia have now been found in abundance in New South Wales waters. Three other species previously not recorded from Australian waters have also been observed off N.S.W. Of these, the species *P. semisulcatus* was caught from beyond the 20 fathoms line and specimens measured up to a foot. Further, *Metapenaeus monoceros* previously believed to be not abundant east of India and a new species allied to *M. endeavouri* have also been obtained.

BRITISH NORTH BORNEO

Tilapia culture:- The first quarterly report for 1954 on Freshwater Fish in British North Borneo indicates an active programme of tilapia culture which has developed rapidly in the inland districts of Tambunan, Ranau and Kemingau. Fifty seven ponds covering about 6,400 square yds. have been completed.

The supply of fry to remote districts in the interior has, hitherto, been a matter of some difficulty owing to poor communications. This has been overcome, however, by arranging with owners of existing productive ponds to sell their surplus Tilapia fingerlings at an agreed fixed price of St. c. 10 each. In addition, some Tilapia fry have been distributed from the official nursery ponds at Sandakan. Out of the 1,054 fry sent to Apin - apin, Tambunan, Tawau, Sapong and Tenosan, Sandakan, 804 survived on arrival. Oxygen containers for the 'closed' transport of fry are being acquired in order to reduce the mortality during the long journey involved.

Several large specimens of Tilapia weighing about 2 lbs. each have been recovered by fishermen in Papar in the lakes where the fry were released in June, 1953. Tilapia were also released in large bomb craters at Tenosan,

Sandakan, in March, 1954. The results of this experiment are not yet known but if successful, further stocking of such craters will be made.

It is also planned to extend Gourami and the Common Carp in the inland districts.

Propaganda pamphlets in Chinese on the culture of Ikan Nile and in Malay and Chinese on rearing Sepat Siam in paddy fields have been issued and distributed among the public.

CEYLON

Fishing Activities :- With the onset of the South West Monsoon there was a slight drop in the landings in the western and southern sectors of the island, and groups of west and south coast fishermen migrated to the east coast where an increase in the fishing activities has been recorded. Trawling operations have produced approximately 2,000 cwts. of fish in three fishing trips between April and mid-May.

Statistical data have shown that 40% of the Island's fish catch is obtained by the operation of the beach seine, but there has been a decline in the annual catch, which may be attributed to over-fishing. The prospects of bringing about an increase in catch by setting a minimum limit to the size of meshes in the cod end of seines during certain seasons or periods to prevent the capture of immature forms, are being examined.

With the gradual realization by the fishermen of the benefits resulting from registration of their fishing craft, the response to the registration programme of the Department has increased, and of an estimated 12,000 fishing craft, about 8,000 applications for registration have been received. Demonstrations of superior lures and hooks for trolling have resulted in growing demands for them from *oru* fishermen.

A new team of Canadian fishermen with the senior Fisheries Biologist, Dr. Medcof, is engaged in long lining, bottom-long lining and mid-water trawling operations off the East Coast of the island.

Fisheries Harbour:- According to the Ceylon Newsletter, the Fisheries Harbour in Mutwal is to be expanded at a cost of nearly Rs. 6 million. Rs. $2\frac{1}{2}$ milion worth of equipment is being obtained under the Colombo Plan. Basically, the work to be done on the project will be in the form of a new 240 feet concrete quay for trawlers, with an entrance 250 feet wide. The harbour itself will be dredged to a depth of 21 feet, so that two trawlers at least can be berthed in midstream, while a third lies alongside the quay. On the 60-feet wide quay, houses will be built for the refrigeration and other plants. A new roadway is also to be built connecting the harbour with a fish market.

Fish Culture:- *Tilapia mossambica, Osphronemus gourami and Trichogaster pectoralis* are being introduced into the rivers, streams and irrigation reservoirs in Ceylon in increasing numbers. Villagers who are being trained in rural development work and young farmers who have formed groups to improve themselves both socially and technically, have been instructed in methods of fish farming in ponds and paddy fields.

Check List of Fishes:- A catalogue has been prepared by the Research Division to serve as a check list of the fishes of Ceylon. It contains illustrated identification keys based on external characters, indices of English, Sinhalese and Tamil names of fish and a relevant bibliography. Information collected on mackerel landings are to be embodied in the report on Rastrelliger which will be submitted to the Indo-Pacific Fisheries Council.

Marketing:- The first fish stall of the Ceylon Co-operative Fish Sales Union was opened at the Central Market in May this year. The stall is equipped with a modern refrigerated fish display cabinet with two chambers. The upper chamber acts as a display case for fish, enabling customers to see the different price-marked varieties available for sale. The lower chamber is used as a storage unit and can hold about 500 pounds of fish. The stall

is also equipped with a new type of weighing machine, a chopping block and a display counter. A high standard of cleanliness is maintained. The sale of fish has increased considerably as the customers are attracted by the way in which fish is preserved, handled and kept free from flies. It is the aim of the organisers to have more stalls of this type in the city.

Socio-Economics Division:- Dr. B. Sundara Raj, having completed the tenure of his assignment in the Socio-Economics Division of the Department of Fisheries, has left Ceylon and his new address is "Park View" Miller Road, Kilpauk, Madras, India.

Visitors :- Dr. C. Miles and Dr. T. J. Job of the FAO Regional Fisheries Office for Asia and the Far East paid a visit to the island in April-May. Besides conferring with the Honorable Minister of Commerce, Trade and Fisheries, the Permanent Secretary of the Minister, the Acting Director of Fisheries, the FAO/ETAP officers and various other authorities concerned with the fisheries of Ceylon, they made brief visits to some of the fishery centres. Dr. Miles undertook a special trip to Jaffna while Dr. Job made a similar visit to Gal Oya.

HAWAII

Pacific Oceanic Fisheries Investigations:- Among items of interest mentioned in the Annual Report of the POFI for the year ending June 30, 1954, are the following in addition to those already published in the former issues of the CAB:-

The initial phase of locating and describing the yellowfin stocks of tuna near the Equator is over and commercial fishing on a limited scale has commenced. The past year's cruises have confirmed that the region between 0° and 5° N. latitude and about 140° and 165° W. longitude yields the highest catch rate of tuna on the experimental gear. It has been found that the yellowfin extend continuously along the Equator from 180° E. to the American continent. Japanese commercial fishing W. of 180° shows that they also extend continuously to Asia. Previous years' premise that the best tuna catches occurred during late summer has been substantiated. As regards the effect of islands upon the distribution of yellowfin near the Equator, it was seen that the catching rates were 1.8 times better around the islands than in the open ocean. The increase was attributed to the presence of small, surface schooling yellowfin around the island in addition to the adults found at mid-depths regardless of nearness to islands. Plentiful tuna schools and live bait were sighted near the Marquesas Islands which have been called the Forgotten Islands and are seldom visited, lying as they do about 2,000 miles southeast of Hawaii.

It is tentatively suggested that along the Equator from 110° W. (the eastern limit of available data) to about 150°-160° W. there is a gradual deepening of the thermocline from near the surface to 400-500 ft., but from 155°-165° E. there is little change in thermocline depth. All aspects studied thus far demonstrate that the region between 155° W. to 160° W. is a transition zone between the eastern and western areas of the sector under study. Several biological indices support the idea that the ecological conditions in the eastern half may differ from those in the western half of the section.

The bigeye tuna, *P. sibi*, was found to spawn at the minimum weight of about 20 lbs. in the Equatorial Pacific. About 3 to 6 million eggs are estimated to be released during each spawning and this tuna appeared to spawn more than once per season. However, bigeye tuna weight data from the commercial "ahi" fisheries of the Hawaii Islands indicated that apparently they do not spawn every year. An annual alteration of size groups occurs, the same model size appearing in the Hawaiian fisheries every other year. Growth, measured from the progression of the frequency modes, appears to

average about 40 pounds each year, with good evidence that 7 - year old fish are about the oldest distinct age group to occur in the Hawaiian Islands. The distribution of tuna larvae in Equatorial waters closely parallels that of zoo-plankton, with both skipjack and yellowfin larvae, the predominant tuna species in the plankton being found in greatest abundance in the Central Pacific from 5° S. to about 8° N. latitute and from 120° W. longitude to 180°. The larvae seem to be equally abundant from about 140° W. longitude to 180°, a distance of about 2,500 miles.

Despite the more or less similar weather from one time of the year to another in the Equatorial Region, there is considerable seasonal variation in plankton abundance. The period from January through March ranked low and September, almost without exception, marked the period of greatest production. Considering the east west variation, the data collected shows a gradient of increasing plankton abundance from west to east, with a tendency towards a levelling off east of 140° W. Copepods were by far the most abundant group present in the plankton samples, followed by foraminifers, invertebrate eggs, tunicates, gastropods, chaetognaths radiolarians, crustacean larvae, ostracods, euphausiids, siphonophores, and amphipods respectively.

Oceanographic data from cruises made by other agencies such as the *Galathea*, *Shellback*, *Carnegie* and *Albatross*, and meteorological and oceanographic data from the new station established last November in the Christmas Island are being collated with that of the POFI in order to extend the scope and geographical coverage in relation to the seasonal distribution of physicochemical and biological features in the Equatorial Mid - Pacific.

Long lining experiments are in progress with steel cable for main line, the gear being wound on metal spools and set and retrieved with a modified Rowe halibut winch. Several devices for mechanically attaching the hook-droppers have been tried and one, a so-called "straphanger" attachment, shows much promise. The function of the straphanger is to attach the baited hook-droppers automatically as the steel main line is being set, eliminating the delay caused by stopping the winch to attach the droppers by hand.

Experiments on artificial baits for tuna have shown that an artificial bait must be attractive in appearance and exhibit motion before tuna schools will show a marked and continuous positive reaction. Studies are now being carried on to develop a self - propelled lure which will be attractive in appearance and contain a chemical attractant as well.

Aeroplane scouting found far fewer fish schools per unit of distance covered than did vessel scouting. The principal reasons for this are the prevailing choppiness of Hawaiian waters and the difficulty of seeing dark-coloured birds, which make up the bulk of the school-accompanying bird flocks, against the deep blue water.

Morphological data obtained on five different Pacific spearfishes are likely to clarify the systematics of the Pacific marlins.

A world bibliography of tuna, including all important papers subsequent to Cowlin's bibliography published in 1930, is almost completed. The Report also lists 17 scientific papers published during the past fiscal year and 10 others which are in the course of publication.

HONG KONG

Improved Fishing Methods :- Demonstrations on the use of underwater lights as an aid to fishing were given by the Fisheries Division to fishermen, who have begun to adopt them in the place of kerosene lamps. Certain improvements are also being made in the existing type of underwater lights.

Ten fishing boats have adopted an improved type of shrimp trawl devised by the Fisheries Division. January and February

were good months for shrimp trawlers and large quantities were caught in the Tap Mun area. In March, shrimp moved to deeper waters and catches were reduced. Purse seining with a single vessel initiated last year by the Division has become quite popular and has been adopted by most of the mechanised boats and some of the sailing vessels.

105 vessels were mechanised during the quarter. The total by the end of March stood at 357. In February two British registered deep-sea trawlers joined the fishing fleet. With junk type vessels, 37 purse seiners, 35 long liners and 14 trawlers were mechanised. For the first time also gill netters appeared on the list of mechanised junks. The diesel engines of the 105 vessels mechanised during the quarter included 65 new engines and 43 new and reconditioned engines of other types.

Fourteen welfare loans for mechanisation varying from Hong Kong $ 4,500 to $ 6,000 were approved in the 1st quarter.

Fish landings :- Fresh fish landings in the first quarter of 1954 were 19% above the corresponding quarter for 1953. About 92% of fresh fish landings were supplied by local fishermen; 8% came from Japanese trawler companies. The increase of catch is attributed to i) better weather conditions; ii) important species in better supply; and iii) the operation of 357 mechanised vessels as against 148 in the corresponding quarter last year.

There were large increases in the catch of white pomfret, white herring, mackerel scad, anchovies, golden sardines, carangoids, yellow croaker and red sea bream. There was some falling off in the catch of croaker, barracuda, golden thread and Macau sole. Fish prices were approximately 9% up on the corresponding prices for the 1st quarter of 1953.

Training of Coxswains :- The 10th class of 49 fishermen finished their training on 19th February, and the 11th class, which includes 39 fishermen, started training on 22nd February. During the first quarter, five fishermen received the full certificate and 56 the modified certificate as laid down by the Marine Department.

Training in marine mechanics commenced during the 1st quarter. The demand for this training is growing in pace with the increase in mechanisation and the need for fishermen to know more about the care, maintenance and repairs at sea of diesel engines. The number of fishermen's applications has greatly surpassed expectations and the class has had to be limited to 20 on account of lack of accommodation and shortage of instructors. The Division is receiving assistance from commercial firms in supplying engines, parts, diagrams, instructional films and lecturers.

Fish culture :- Owing to the warm weather in January the spawning of the grey mullet was delayed, the fry collection of the grey mullet yielded less, and the ponds at Un Long could be stocked only up to about 75% of their normal capacity.

All ponds in Un Long were surveyed and new ponds were built at Un Long Market, Tai Po village, Shiu Pin village and St. Christopher's Home. Common carp has bred satisfactorily and 16,000 fry are intended for raising in paddy fields.

Research :- The Fisheries Research Unit of the Hong Kong University has established its initial hydrological programme. Close co-operation continues between this Research Unit and the Fisheries Division of the Department of Agriculture, Fisheries and Forestry. Studies have been initiated at 52 centres under four divisions of the territorial waters of the Colony. Biological studies on plankton, the golden thread (*Synagris virgatus*), the lizard fish (*Saurida tumbil*), the grey mullet (*Mugil cephalus*) and the local Peneid prawns are in progress. Special attention is paid to oyster mortality reported from Deep Bay.

Exhibition :- A fisheries exhibition of educational value was held, and the exhibits included fishing gear, sea products, diesel engines, etc. The farmers took keen interest in a model of paddy fields and fish ponds at the Agricultural Show held at Un Long.

INDIA

Central Government:- An *ad hoc* Fisheries Research Committee has been set up by the Government of India for reviewing the work so far done by the Central Research Stations and suggesting a programme of work for the next five years with special attention to problems effecting commercial fisheries. The Committee will also examine the items of work which the State Organizations and Universities are handling or can efficiently handle in the near future so that in drawing up the programme of work for the Central Stations, duplication may be avoided.

The Committee consists of the Fisheries Development Adviser (Chairman), the Chief Research Officer, Central Marine Fisheries Research Station, Mandapam, and Dr. W.H. Rich of Stanford University, U.S.A. The Chief Reseach Officer of the Central Inland Fisheries Station, Calcutta, will be co-opted when the work of his station will be reviewed.

The Committee visited Madras, Calicut, Mandapam, Bombay and Rajkot.

The bull trawling operations of the cutters, "M.T. Ashok" and "M.T. Pratap" under Japanese technicians have been continued. The total quantity of fish landed during the five voyages, Nos 6 - 10 made from 19.3.53 to 31.5.54 are given below. The fishing operations were suspended on 1.6.54 on account of the monsoon.

Voyage No.	*Quantity of fish caught*	*No. of days absent from the port*
6	43.5 tons	10
7	49.0 ,,	13
8	9.0 ,,	9
9	30.0 ,,	10
10	17.0 ,,	10

Travancore-Cochin:- Post-monsoon fishing activities are being planned under the Norwegian India Foundation. Three Norwegian fishing vessels of 54, 48 and 30 tons gross, respectively, would soon be stationed at the port of Cochin and with mixed crews of Norwegians and Indians, will operate off the Tranvancore - Cochin coast on experimental fishing with different gears and on investigations of fisheries and fishing grounds. Owing to the limitations of natural harbours along the coast, special attention will be paid to the development of small beach landing crafts.

Indian Fisheries Bulletin:- With a view to disseminating information among workers in the various Central and State fisheries institutions in India a quarterly bulletin entitled the Indian Fisheries Bulletin has been issued in mimeograph by the Agriculture Division of the Ministry of Food and Agriculture of the Government of India, commencing January, 1954.

Besides administrative and technical reports concerning the different fisheries organizations within the country, brief notes on relevant items of important fisheries news from abroad are included in the Bulletin. Three numbers of the first volume have been issued so far.

Indian Journal of Fisheries:- A new periodical named the Indian Journal of Fisheries has commenced publication under the Ministry of Food and Agriculture, Government of India. The inaugural volume consists of the first two numbers issued together and comprises 416 pages. Later volumes are expected to be issued twice a year in separate numbers.

The Journal provides a medium for the publication of original contributions and critical reviews in the field of fisheries research and will cover subjects relating to fishery biology, fishery technology and other scientific

topics of direct and indirect bearing on the development of fisheries science.

Original contributions on fisheries are welcome from workers within India and outside and they may be addressed to any member of the Editorial Board which consists of the following: The Fisheries Development Adviser to the Government of India (Chairman), Ministry of Food and Agriculture, New Delhi; the Chief Research Officer, Central Inland Fisheries Research Station, 47/1 Strand Road, Calcutta-7; and the Chief Research Officer, Central Marine Fisheries Research Station (Managing Editor) Mandapam, Ramnad, S. India. The current volume is priced at Rs. 7/8/-. Copies may be had from the Managing Editor.

INDONESIA

National IPFC Committee:- By decree of the Minister of Agriculture of Indonesia, a permanent National I. P. F. C. Committee has been established with the following composition: Chairman - Mr. R. Pranjoto, Vice-chairman - Mr. H. Saanin, Second Vice-chairman - Mr. G.M.C. Kasuma, Secretary-Miss Boediningsih, Members - Indonesian members of the Council's committees, sub-committees, panels and working groups, Mr. S. Malangjoedo and Mr. Achjar. The Chairman, Secretary, and the Second Vice-chairman constitute an Executive Committee.

Experimental Brackish-water Ponds:- On July 24, the Ministry of Agriculture officially opened a new set of 50 brackish-water ponds under the Inland Fisheries Research Station. The ponds have been constructed at a cost of 50,000 rupiahs and are situated within the municipal limits of Djakarta, It is proposed to conduct experiments on food, stocking rate and nursery requirements of chanos and pawns and on manuring and farming of brackish-water in general.

Five Year Plan of Production:- A production target of 600,000 tons of sea fish and 420,000 tons of inland fish by 1959 is reported to be aimed at under the 5-year plan for Agriculture of the Government of Indonesia. An expenditure of Rp. 1.2 billion a year is estimated for the implementation of the plan.

Officers' Tours:- Mr. A. Airfin, Chief of the Sea Fisheries for South Surawesi and Mr. F. W. Waworuntu of the East Indonesian Inspectorate of Sea Fisheries have returned from a nine-month study of fish marketing and distributing systems in the United States and Japan under the sponsorship of the FOA.

Mr. G.M.C. Kasuma, Chief, Socio-Economics Division of the Sea Fisheries Department, and Mr. Eddiwan, Chairman of the Indonesian Fisherman's Co-operative Association, have returned after the FAO/ETAP Fish Marketing Training Course of six weeks at Hongkong.

JAPAN

Fish Culture:- The suitability of Tilapia for Japanese waters is being taken up for investigation. A series of coloured slides of rice-cum-carp culture is to be shown at the International Rice Commission Meeting which is being held in Tokyo from 11 to 19 October.

Study of Effect of Radio-activity on Fisheries:- Carrying a Japanese research group planning to study the effects of radio-activity in the waters surrounding the Bikini Atolls, "the Shunkotsu Maru" (588 tons) was despatched to the zone by the Fishery Agency on May 15. The group will study the conditions in the blast zone around the Bikini Atolls regarding the physiology of fish, pollution of sea water and air, tuna fishing, ocean currents and others. It is hoped that the results of these studies will contribute

towards clearing a general feeling of unrest caused by the Bikini thermonuclear test.

Storm Havoc on Fishing Boats in Hokkaido :- Much damage was done on fishing boats by the furious storm that lashed the eastern waters off Hokkaido on May 9 and 10. The official report as of May 21, revealed 21 killed, two severely wounded, 390 missing, 44 vessels sunk, and 40 more vessels missing. Moreover, fishing port facilities, fishing gear and fish nurseries were also seriously damaged by the storm.

Fisheries Statistics :- According to information No. 89 of the FAO Association of Japan, the marine fisheries catches in Japan during 1952 and 1953 are as follows :-

A. Catches by Kinds of Fisheries (1953 and 1952)

Item	1953 (Jan. - Dec.)		1952 (Jan. - Dec.)		Percentage (1952 - 100)
	mts.	%	mts.	%	%
Fish	3,181	76	3,255	73	97
Sea - shells	176	4	138	3	127
Others	598	14	792	18	75
Sea - weeds	251	6	283	6	88
Total	4,206	100	4,468	100	94

Note: Excluding whaling, mother - type fisheries, coastal pisciculture, and inland water fisheries.

B. Catches by Kinds of Fishes (1953 and 1952)

Fish by kind	1953	1952	Percentage (1952 - 100)
	mts.	mts.	%
Sardine	280	321	87
Herring	6,322	6,373	94
Bonito	87	1,110	78
Mackerel	219	253	76
Horse - mackerel	237	206	114
Skipper	253	226	112
Squid	4,608	5,889	70
Kelp	1,452	1,583	91

Visitor :- Dr. D.B. Finn, Director, FAO Fisheries Division, on his way from Canada to Hong Kong, spent a week in Japan in June and conferred with the Government authorities, fisheries officials, fishermen and fisheries company executives and paid a number of visits to fishery stations, laboratories and fish markets.

PHILIPPINES

Pond fisheries :- The public is taking keen interest in the fish pond industry. Figures for the end of 1953 show a total of 95,633 hectares of fish ponds in operation. Of this, 54,420 hectares are under private enterprise. The first quarter of 1954 witnessed an increase of 1,323 hectares under pisciculture. Over 54,000 hectares of potential swampland are still available. The Province of Cotabato ranks first in fresh and brackish-water fish pond potential, and has at present over 2,300 hectares of government fish farms in operation and more than 7,800 hectares as available swamplands. Applications for fish ponds continue to be received.

Conservation :- Pursuant to the campaign launched by the Philippine Navy and the Bureau of Fisheries against illegal fishing especially by the use of explosives, three commercial fishing boats were apprehended and the operators punished with fine and temporary suspension of operation.

Pearl Culture :- A unit of eight Japanese pearl culture technicians who studied the conditions in Palawan is reported to be very optimistic about establishing the industry here. It is understood that these technicians who are on a temporary visit to the Philippines have expressed willingness to remain and set up a pilot plant and to train Filipinos in pearl culture.

Officers' Travels :- Dr. D.V. Villadolid, Director of Fisheries, who made an inspection tour of the Bicol regions observed rapid progress in the development programme in the area especially in fish culture, both private and public.

Mr. T. Megia, who has taken up the post of Information Officer in the Bureau of Agricultural Extension Service, has been replaced by Mr. A. Sebastian as Oceanographer of the Bureau of Fisheries.

Messrs. J. R. Montilla and B. Onchangco of the Bureau of Fisheries returned on August 23 from Hong Kong after the completion of the six-weeks' training in Fish Marketing.

Mr. G. Ferrer, Gear Technologist, left the Bureau of Fisheries in June to accept an FAO Technical Assistance assignment in Saudi Arabia. Mr. S. B. Rasalan has replaced Mr. Ferrer in the Bureau.

Visitors :- Mr. M.J. Lobell, FOA Fisheries Specialist, spent two weeks in Manila in May and held discussions with the Director of Fisheries concerning projects to be considered for FOA aid.

Mr. C. Beever, Fisheries Economist from the FAO Fisheries Division, Rome, spent the last week of August in Manila and observed fish landings and marketing in the city and the suburbs.

Mr. M.B. Swee, Burmese Government scholar, arrived on July 3 and is undergoing training in fish culture at the Philippine Institute of Fisheries Technology.

THAILAND

Fish Meal Plant :- The Thai Fishing Company owned by the Ministry of Agriculture, opened on July 12, 1954, a modern fish meal plant on the Matapon Island at the mouth of Chumporn River, on the west coast of the Gulf of Thailand. The plant has a daily production capacity of 5 tons of fish meal, utilizing 30 tons of raw fish. The machines are partly of German and partly of Danish origin. The total cost of the plant is 1,300,000 baht. This is the first plant established for the regular production of fish meal of Thailand.

Hydrographic Study of Singora Lake :- The Department of Fisheries and the Royal Hydrographic Service of the Navy have co-operated in a joint study of the Singora Lake from June to August 1954.

Fish Culture Centres :- The Department

of Fisheries has established freshwater fish culture centres at Khonkaen, Mahasarakam, Nakorn Rajsima, and Udorn in N.E. Thailand. A fifth one at Ubol Rajdhani is under construction. Each centre will have 5 rai of water area. Tilapia, Sepat Siam, Giant Goramy, and common Carp are being propagated at these centres for the requirement of fish farmers and for stocking the irrigation tanks.

Increasing interest in Chanos culture is shown by fish farmers in the Provinces of Petchaburi and Chacherngsau. Since January, 1954, 50,000 Chanos fingerlings have been given out by the Brackish-water Fishery Centre at Prachuab Kirikhan. Chanos fry have been reported to be found in the Inner Gulf, and the search for convenient collection grounds is being continued.

UNESCO

Cashing UNESCO Coupons :- Users of UNESCO coupons will be interested in the under-mentioned facilities for cashing the coupons :-

Suppliers who have received UNESCO coupons in payment for material which they have furnished should send these to UNESCO, 19 Avenue Kleber, Paris-16, France. Coupons will be redeemed to suppliers in their national currency at the official rate of exchange for the dollar after deduction of the percentage peviously agreed upon. American suppliers may, if they prefer, present coupons to UNESCO's New York Office, Room 2,201, UN Building, New York 14, N.Y., U.S.A., for redemption. In India the coupons can be cashed at the UNESCO Science Co-operation Office, C.S.I.R. Building, Old Mill Road, New Delhi.

Travel coupons :- UNESCO has initiated a Travel Coupons system providing a form of international travellers' cheque. This facilitates foreign exchange to those travelling to educational institutions, conferences etc. in other countries. Thus, travellers from soft currency areas can, through these coupons, obtain dollars, Swiss francs or other needed currencies. The coupons are issued in denominations of $10, $25 and $100 and may be cashed like travellers' cheques in the country of destination. In each country where the scheme operates, a national authority will determine the eligibility of applicants for Travel Coupons. The countries participating in this scheme include: Cambodia, Canada, France, Israel, Laos, Netherlands, Salvador, Switzerland, Uruguay, United States of America and Vietnam.

Treaty on Educational Films :- According to the United Nations Public Information Department's Daily Report, international agreement exempting educational films, sound recordings and other audio-visual materials from tariff and trade restrictions entered into force in August, 1954, in Cambodia, Pakistan, Philippines, Canada, El Salvador, Haiti, Iraq, Norway, Syria and Yugoslavia. A number of other countries have signed the agreement, but not yet accepted it formally.

Scientific Research :- Among the proposals stressed by the UNESCO's International Advisory Committee on Scientific Research which held its first meeting in Paris earlier this year, is one to the effect that studies relating to the development of oceanographic research in the Indo-Pacific Region be continued. The Committee has also decided to call in 1955 an international conference of directors of national scientific research centres and councils.

Manila Branch :- The Manila Branch of the UNESCO Science Cooperation Office for South East Asia has been discontinued on June 30. The work for the Pacific Area will be carried on from the main office for South East Asia at Djakarta.

FOOD AND AGRICULTURE ORGANIZATION

The FAO/ETAP Training Course in Fish Marketing :- The six weeks' training course in Fish Marketing conducted at Hong Kong was successfully completed on 21st August, when twenty-five overseas participants from ten countries of the Indo-Pacific Region and five officers from Hong Kong received certificates from Mr. J. T. Wakefield, Director of Marketing and Registrar of Co-operatives, Hong Kong, who was Director of the Course, with Mr. C. Beever, FAO Fisheries Economist, as Co-Director.

In addition to a series of demonstrations dealing with the organization, management and operation of the Hong Kong Fish Marketing Oganization and allied activities of fish trade, the lectures delivered during the course covered the following subjects:- General Economics and the Economics of Marketing; Fish as a Commodity; Fish Supplies; Technology of Fish Marketing; Business Management; Fisheries Co-operatives; Special Functions of a Marketing Organization; Organization forms; Government Services in Fish Marketing.

Discussions in which the trainees took an active part, raising issues of their respective countries and contributing considerably to the solution of one another's problems formed a special feature of the Training Course.

Training in Experimental Design and Survey Technique of Experimentation :- A three months' training course in Experimental Design and Survey Techniques of Experimentation is to be conducted at New Delhi from 20th September to 18th December, 1954, by the Food and Agriculture Organization in co-operation and with the help of the Government of India.

The instruction which will be in English, will cover basic statistical methods and principles, experimental designs and survey techniques and their application to problems in agricultural and animal husbandry investigations including fisheries.

Enquiries regarding the course may be sent to the Director, Economics Division, FAO, Viale delle Terme di Caracalla, Rome, Italy.

Officers' Travels :- Mr. C. Beever, Fisheries Economist who proceeded to Hong Kong in July, made short stays on his way in India and Thailand and after serving as Co-Director of the Fish Marketing Centre, left Hong Kong in August. En route back to Rome, he visited Manila and Karachi.

INDO-PACIFIC FISHERIES COUNCIL

Rastrelliger Sub-Committee :- The following members have been nominated by the Member Governments concerned to the Council's Sub-committee on Rastrelliger under Panel B of Technical Committee I: Ceylon - Mr. P. Canagaratnam; India - Dr. N. K. Panikkar; Philippines - Mr. P. R. Manacop; Thailand - Mr. T. Bamrajarinpai; Vietnam - Monsieur Tran Ba Loc; United Kingdom - Mr. D.W. Le Mare (for Malaya).

National Meetings of IPFC Office-bearers :- It is reported that Meetings of the IPFC Office-bearers in Hong Kong, Philippines, Thailand and Indonesia have been held in the respective countries in pursuance of the Council's suggestion made at its 5th Meeting that the Administrative Correspondents should convene such meetings.

GENERAL

Sounds made by shrimps:- According to a Commercial Fisheries Review report, tests carried out off Key West, Florida, to determine if commercial varieties of shrimp such as *Penaeus duorarum* produce any characteristic sounds, have yielded interesting results.

The sounds attributed to the shrimp are well above the level of background noise usually encountered in the sea, and most of the energy seems to be concentrated in a frequency band between 3,000 cycles per second. Although the observations to date have been only of a qualitative nature, these tests indicate that there are good possibilities of utilizing these sounds for locating beds of shrimp by means of passive listening devices.

A detailed frequency analysis of the shrimp sounds will be made in the near future at the Coral Gables electronics laboratory of the U. S. Fish and Wildlife Service in cooperation with the University of Miami Marine Laboratory at Coral Gables.

New Prawn off Chilean Coast:- Chilean Fishermen, conducting deep sea trawling along the edge of Chile's continental shelf at the recommendation of an FAO Technical Expert, Dr. F. de Buen, have discovered a new and succulent type of prawn which is fetching high prices in the markets of Santiago. A detailed study is being made of the prawn which appears to be closely related to *Heterocarpus hostilis* Faxon.

Plastic Hulls for Boats:- Boats with hulls of plastic resin-glass fibre, particularly suitable for use in tropical waters, are reported to have been perfected by a British firm. It is claimed that the craft do not deteriorate in or out of water, they do not "spring" or warp, they do not rot, they are not attacked by torpedo worm or any other marine insect, and they need no special housing or laying up when not in use. Damages to the hull can be repaired easily.

Fishing Nets of Nylon and Plastic:- Among the reasons suggested for the superiority of the nylon nets are their greater elasticity, which enables them to catch and hold larger fish than the cotton ones, and their relatively greater invisibility in certain lights. Nets made of vinyl plastic are reported to be very durable. These plastic nets have been used successfully for tuna seining in Japan, where it is estimated that they may last for five to seven years, compared with two to four years in the case of cotton nets.

Preservation of Fish in Chilled Sea Water:- Experiments conducted by the Pacific Fisheries Experimental Station on the preservation of salmon and shrimps in chilled salt water have brought out interesting results. Early this year a load of 600 pounds of shrimps from Cape Lazo was brought to Vancouver after four days' hauling. The load had been placed in tanks of sea water at a temperature of 41° F and cooled to 30±1° F. The shrimps were found to be of good quality though difficult to pick. The difficulty could be solved by using brine somewhat saltier than sea water and containing 6% salt which gave a firmer, better quality, more easily picked product than the shrimps held in chilled sea water.

Fish Sticks:- A form of fish preparation which gained fast popularity in the U.S.A. in 1953 is the fish sticks which are made from boneless fillets and are all ready just to heat and eat, being breaded, seasoned and butter fried. Blocks of frozen fish or fillets are mechanically cross-sawed to fish stick size — usually about $4'' \times \frac{3}{4}'' \times \frac{1}{2}''$. The sticks are dipped in a batter containing the seasoning, breaded and fried in hard shortening. They are then packaged and frozen.

Fish sticks are highly popular, especially for the school lunch programmes which are common in the U.S.A. Consumer acceptance of this new product of 1953 was so high in the U.S.A. that late in the year firms were reported to have had difficulty in keeping up with orders. On the basis of the December, 1953, production rate, it is estimated that the output of fish sticks in the U.S.A. should reach well over 30 million lbs. in 1954.

PUBLICATIONS

"Studies on Germicidal Effect of Ultraviolet Ray Germicidal Lamp," By H. Yamada. Rep. Res. Lab. Nippon Suisan Co. Ltd., No. 6, 1954. Conclusions on tests made on the germicidal effect of the 15 watt glass germicidal lamp (ultraviolet ray) (G L. - 15-L) are as follows:

1) When the lamp was turned on against the ceiling for five hours in a room of 95.6 cubic metres for disinfecting the air, the count of bacteria was reduced to half, but no effects were noted on yeast and mold.

2) When the lamp was used directly on bacteria and yeast which had fallen on the media, the bacteria and yeast were exterminated within 30 minutes, the distance of the lamp being under one metre.

3) When the lamp was used directly on food within a distance of 50 cm for 2 hours daily, the surface could be disinfected, but not the interior. Similarly it was effective against yeast and mold on the surface.

"A Coloured Atlas of Some Vertebrates from Ceylon", by P.E.P. Deraniyagala, Vol. I, Fishes, 1932 and Vol. II, Reptilia, 1953. Ceylon Government Press. The first volume contains 34 colour plates and 60 text figures and deals with Ceylon's existing fishes including fresh water and marine species with scientific and local names. The second volume is also amply illustrated and deals with the zoogeography of turtles, crocodiles and other reptiles of Ceylon. Rs. 15/- per volume.

"The Norwegian Indian Project in Travancore-Cochin". Report No. 1, 1954. Indiafondet, Foundation for Assistance to Underdeveloped Countries, Oslo, Klingenberggt, 7, P.O. Box 1330 Vika, Norway.

"Directory of Hydrobiological Laboratories and Personnel in North America", by R.W. Hiatt *et al.* 1954. University of Hawaii Press, Honolulu. $3.75.

"Bibliography of Interlingual Scientific and Technical Dictionaries" (enlarged edition). UNESCO, 19 Avenue Kleber, Paris or UNESCO National Distributors. $1.75.

"Directory of International Scientific Organizations, 2nd edition (revised)" UNESCO (vide preceding item) $2.50.

"A Study of Populations of Anchoveta, *Cetengraulis mysticetus* based on Meristic Characters," By G.V. Howard. Inter American Tropical Tuna Commission Bull. **1** (1). Scripps Inst. Oceanogr. La jolla, California.

"Some aspects of the Dynamics of Populations important to the Management of the Commercial Marine Fisheries", by M. B. Schaefer. Inter-American Trop. Tuna Comm. Bull. **1** (2) (vide preceding item).

"Purification of Oyster in Simple Pits", by H.A. Cole. Ministry of Agriculture and Fisheries (U.K.) Fishery Investigations, Ser. II, 8 (5), 1954.

"A New Species of *Otobothrium* (Cestoda, Trypanorhyncha) from Australian Fishes", by I.D. Hiscock, Parasitology, 44 (1 & 2), 1954.

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